SOFTWARE QUALITY & SYSTEMS ENGINEERING PROGRAM

Software Design Checklist

The following checklist is intended to provide system owners, project managers, configuration managers, and other information system development and maintenance professionals with guidance in identifying and planning software design activities. The checklist reflects recognized design activities to be performed throughout the information system project life cycle.

Software design starts as a process for translating documented sytem requirements into a user-oriented functional design. The system owner, users, and project team finalize this design and use it as a basis for the more technical system design.

Note: The degree to which the following design activities are applied may vary with the nature, scope, size and complexity of a project.

Software Design Checklist	SEM Reference	Comments
❒ Documented system requirements are used as the basis for selecting a design methodology.	Chapter 4.0 Select Design Technique	
❒ Resources necessary to perform software design activities on the project (i.e., estimated staff, development tools) are identified.	Chapter 3.0	
❒ A software structure is identified by using a documented design methodology.	Chapter 5.0 Determine Software Structure	
❒ System design entities, inputs, and outputs are derived from the software structure.	Chapter 5.0 Determine Software Structure Design Content of System Inputs and Outputs	
❒ User interfaces are designed in consultation with the system owner.	Chapter 5.0 Design User Interfaces	
❒ A logical data model which describes the system's data control flow is constructed.	Chapter 5.0 Build Logical Model	
❒ A Functional Design Document is created and distributed to the project team members and the system owner.	Chapter 5.0 Create Functional Design	
❒ A Functional Design Review is performed.	Chapter 5.0 Conduct Functional Design Review	
❒ At least one In-Stage Assessment is performed before the Functional Design Stage Exit.	Chapter 5.0 Conduct Functional Design Review Stage Exit process (guide)	
❒ A system architecture including hardware, software, database, and data communications structures is specified.	Chapter 6.0 Select System Architecture	
❒ An Analysis of Benefits and Costs (ABC) is conducted on several system architecture alternatives and is used as the basis for an architecture recommendation.	Chapter 6.0 Select System Architecture	

Software Design Checklist	SEM Reference	Comments
❒ Functional Design entities are used as the basis for creating system modules, procedures, and objects.	Chapter 6.0 Design Specifications for Software Modules	
❒ A physical data model, based on the logical data model, is developed.	Chapter 6.0 Design Physical Data Model and Database Structure	
❒ A system design is approved and baselined.	Chapter 6.0 Develop System Design	
❒ Changes to the system design baseline are managed and controlled.	Chapter 6.0 Develop System Design	
❒ A System Design Document is created.	Chapter 6.0 Develop System Design	
❒ A Critical Design Review is conducted.	Chapter 6.0 Develop System Design	
❒ At least one In-Stage Assessment is performed before the System Design stage exit.	Chapter 6.0 Conduct In-Stage Assessment In-Stage Assessment Process (guide)	
❒ System design activities are reviewed with the project manager/leader both periodically and as needed.	Chapter 6.0	
❒ Software Quality Assurance/Improvement periodically reviews and/or audits software design activities and work products and reports the results.	Chapter 6.0 In-Stage Assessment Process (guide) Stage Exit Process (guide)	

REFERENCES

The following resources can be referenced for additional information on software design practices and procedures. Note: This checklist is in compliance with Software Engineering Institute guidance and most standards.

Systems Engineering Methodology

Software Engineering Institute's Software Capability Maturity Model (SEI CMM)
System Design is a piece of the Software Product Engineering Key Process Area in Level 3 of the Model.

Institute of Electrical and Electronic Engineers (IEEE)
The IEEE Standard for Developing Software Life Cycle Processes.

National Institute of Standards and Technology (NIST)

Organization for Standardization (ISO)
ISO 9001.